Knowledge Management and Decision Support

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Why is Knowledge Management Important?

The term Knowledge Management (KM) has become a key issue for government, industry and certainly Information Technology (IT) executives. Several magazines have KM in their title, and the number of books (amazon.com shows 423) is exploding. Organizations are becoming increasingly aware of the importance of managing knowledge, like any other asset, to improve their competitive advantage. Yet there is still disagreement as to the vision and definition of KM.

Careful application of knowledge, like other assets, can result in better decisions, particularly, at the working level. It's not decisions made by strategists at the top that make or break a company; but the sum total of the day-to-day decisions made at the front lines of an organization. Better decisions are achieved by spending less time on information gathering and more on the creative process. Decision support systems help with the analysis, but are still driven by the ability to find relevant information.

Organizations are coming to the realization that they must manage their organizational knowledge in a more structured fashion. The problems of KM span the organization and are not subject to "one size fits all" solutions. Simplistic approaches will make little progress to managing knowledge assets. Sufficient time, talent and thought must be applied to the scope of the KM effort and the technology required. It is this full range of application that characterizes high-value KM.

By 2003, at least fifty percent of Global 2,000 companies will have implemented formal management of intellectual capital with knowledge management processes in key business units of competencies.[1]

Studies show that in the past five years organizations have spent $20 billion on supply chain automation, $25 billion on sales force automation and $100 billion on enterprise resource planning applications. In addition to the billions already spent to automate commerce processes, the level of technology investment approaches $200 billion. While all this technology allows departments to function more efficiently by themselves, it doesn't allow people to interact with, or extract information from, other automated areas of the enterprise.

What is Knowledge?

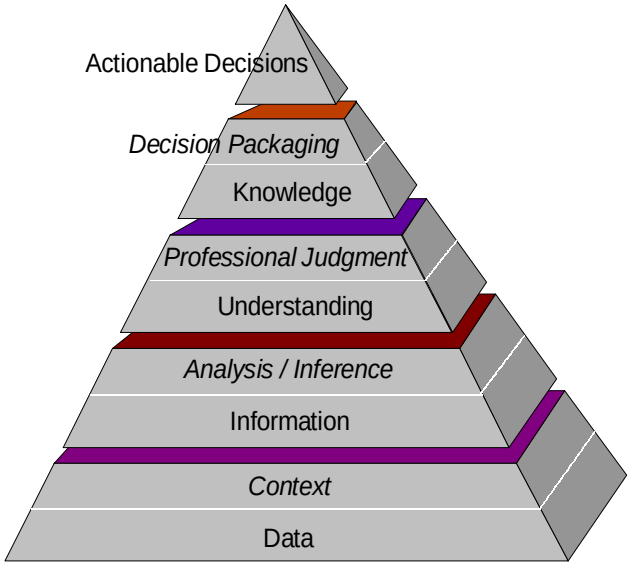
Before one can talk about *knowledge management*, it is useful to have an understanding of "*What is knowledge?*" Knowledge is defined by Peter Drucker as "Information that changes something or somebody---either by becoming grounds for actions or by making an individual (or an institution) capable of different or more effective action." This definition addresses both the individual and corporate aspects of knowledge. Additionally, it focuses on the desired goal of more effective action, i.e. competitive advantage.

Knowledge is typically thought of as the higher-order result of the data acquisition process. The concept of transforming data into information is well known and understood. This concept can be extended to characterize knowledge as part of a *relationship pyramid*.

[1] GartnerGroup (Anderson, Mike). "The Knowledge Workplace: Enabling Knowledge-Powered Management." Proceedings of *The Knowledge Workplace: Transforming How and Where We Work*, 13-15 March 2000, San Antonio, TX.

The goal of intellectual effort is often to solve a problem or reach a decision or conclusion. This is fundamentally the driver for knowledge. The pyramid illustrates how:

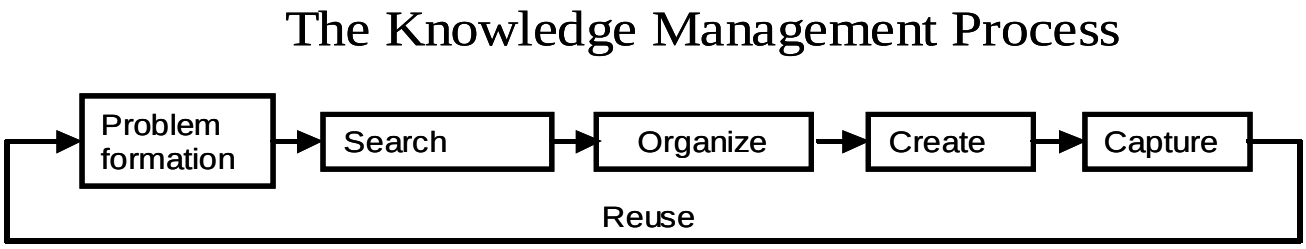
- Data in context yields information
- Information after analytical effort yields understanding
- Understanding when combined with professional judgment yields knowledge
- Knowledge in turn supports decision-making.



Knowledge falls into two broad categories; explicit and implicit. Explicit knowledge is that which is available for access (e.g. books, reports, databases, multimedia, etc). Although finding the *right knowledge* at the *right time* to make the *right decision* may be difficult. This is the traditional problem of information storage and access. Implicit knowledge is that which is known by persons in the organization, but has not yet been made explicit. All organizations have experts in many areas; the key is making the appropriate knowledge accessible, either by making it explicit or having mechanisms to locate key expertise.

What is Knowledge Management?

Knowledge Management, by definition, is an integrated, systematic approach to identifying, managing and sharing an enterprise's information assets, including documents, databases, policies, procedures, and implicit expertise. This systematic approach is illustrated by:



- Problem formulation: define the scope of the knowledge effort
- Search: locate currently available information and expertise
- Organize: analyze and categorize the information
- Create: create new knowledge and understanding
- Capture: make the knowledge explicit and make it available for others
- Reuse: update the knowledge structure so others can reuse this knowledge (now converted into information)

This process has long been followed by scientific disciplines, but now must be extended to other parts of the organization. This will require a culture change. In fact, it has been estimated that knowledge management is 80% a cultural problem. Getting the job done can no longer be the only

goal. Contributing to the organization's knowledge assets must be an integral part of the culture. This requires new ways to reward this behavior, and is essential to promote knowledge sharing across the organization. Knowledge sharing will lead to global organizational learning and increased productivity.

What are the technologies for Knowledge Management?

The technologies for Knowledge Management revolve around implementing the KM Process. Each of the stages has existing technologies, although many are marketed under the global "knowledge management" title. Some span several of the stages, but addressing the entire spectrum requires careful thought and planning.

- Problem formation:
  - Strategic planning techniques
- Search:
  - Search engines and Information portals
  - Databases (e.g. Lexis-Nexis)
  - Information Systems (GIS)
  - Data mining and warehousing
  - Expertise tracking and locating
- Organize
  - Decision Support Systems
  - Word processors
  - Knowledge Mapping
- Create:
  - Group Decision Support Systems
  - Collaboration Portals
  - Discussion groups
  - Video Teleconferencing
- Capture:
  - Peer review
  - Cataloging and indexing
  - Business practice repository
  - Documents designed for retrieval by coding content (XML)
- Reuse
  - Cultural incentives
  - Metrics

How Knowledge Management Effects Decision Makers

Decision makers would like seamless access and delivery of all types of information (data repositories, document libraries, procedures, expertise) into the decision process. All relevant information, regardless of its storage type and representation would be categorized and made available. Existing commercial web sites (e.g., www.northernlight.com) offer an example of this kind of query. However, a query of "Red River fish habitat" returned 30,474 items, categorized into 12 areas. This is certainly more than a decision maker can sort through. The problem is generally one of too much information, rather than too little. Getting just the "right" information is

one of the “holy grails” of KM. Don’t expect a solution soon. However, an emerging technique that holds promise is eXtensible Markup Language (XML http://www.xmlinfo.com/newcomers/).

XML describes classes of data (text, video, process, expertise) and the behavior of application programs that process them. XML allows applications to find and present information. For example, 618264237 is an area code, presented as 61826-4237, and not the number of ducks in Illinois.

In Summary:

Fundamentally, knowledge management makes the collective information and experience of an enterprise available to the individual knowledge worker, who is responsible for using it wisely and for replenishing the knowledge asset. This ongoing cycle promotes a learning organization, stimulates collaboration and empowers people to continually enhance the way they perform work.